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10/526,556

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Michael J. Evans

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EXAMINER

DINH, TRINH VO

ART UNIT

PAPER NUMBER

2821

MAIL DATE

DELIVERY MODE

11/18/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/526,556 | Applicant(s) EVANS ET AL. | |
| | Examiner Trinh Vo Dinh | Art Unit 2821 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-24 is/are pending in the application.
- 4a) Of the above claim(s) 23 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 2 is/are allowed.
- 6) ☒ Claim(s) 1,3-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is a response to amendment filed 08/13/2008. Claims 2 and 25-26 are canceled. Thus claims 1 and 3-24 are pending in which non-elected claims 23-24 are withdrawn. The rejections of claim 16 under 35 USC & 112 second paragraph have been withdrawn in view of the amendment. In addition, the amendment overcomes the 102 rejections based on references Kim, Burroughes and Yamamoto. However, the argument with respect to amended claim 1 regarding Slayman reference found unpersuasive. Therefore, amended claims 1 and 3-22 are rejected as discussed below.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "side-walls" in claim 1 must be shown or the feature(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

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pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 3 is objected to because of the following informalities:

In claim 3 line 3, "photoconductive material" should be changed to --said photoconductive material" since the material has been recited in based claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 and 3-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 line 6 recited "said recess including side-walls", then line 7 recites "a side wall of said recess". It is unclear if "a side-wall" is one of the side-walls or different from the side-walls recited in line 6. If "a side-wall" recited in line 7 is one of the side walls recited in line 6, "a side wall" should be changed to --one of said side-walls--. For an examiner's purpose, "a side wall of said recess" in line 7 is the best understood as "one of the side-walls of said recess".

Claims 3-22 are rejected because they depend on the based rejected claim.

Claim Rejections - 35 USC § 102

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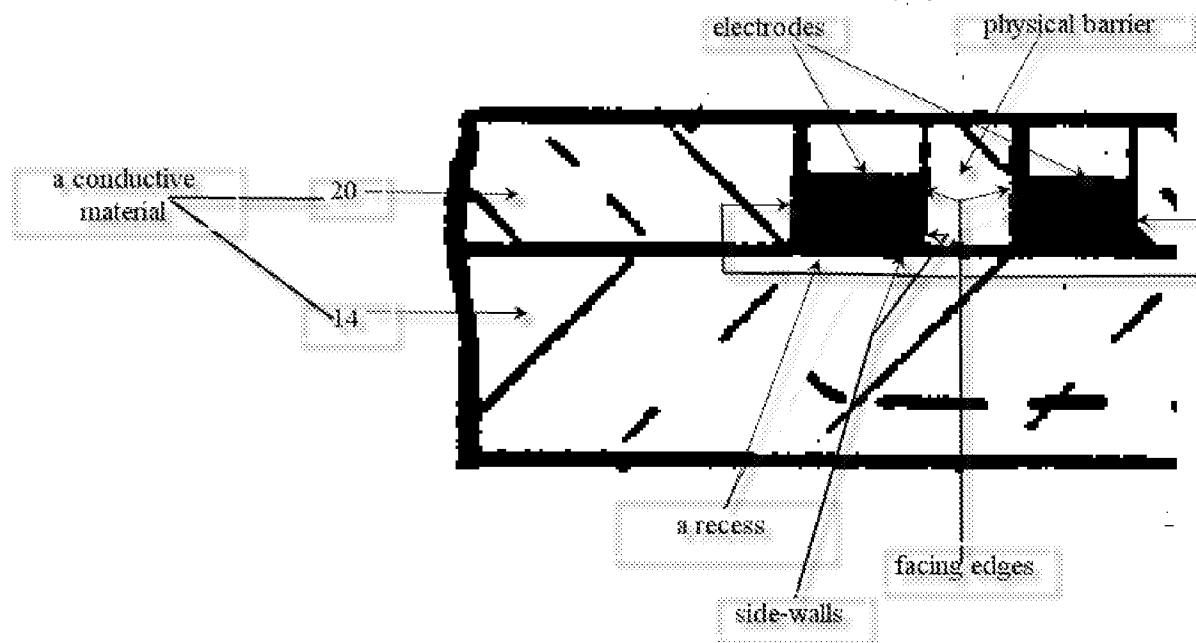
5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3-5, 7-10, 14-18 and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Slayman et al (US 4,696,648 of record).

Respecting claim 1, Slayman discloses, in Figs. 1-2 or the Drawing 1 below, a photoconductive material (14 and 20) and a plurality of spaced apart electrodes (16, 18) provided on said photoconductive material, each electrode having at least one facing edge which faces a facing edge of an adjacent electrode, a physical barrier (col. 1 line 68) being provided abutting a facing edge of at least one electrode, said barrier extending to at least the full height of said facing edge. Slayman further discloses the facing edge of the at least one electrode is provided within a recess of the surface of said photoconductive material, said recess including side-walls formed from said photoconductive material, one of the side-walls of said recess providing said barrier.



Drawing 1

Respecting claims 3-4, Slayman discloses the facing edges of adjacent electrodes are provided within recesses, such that the side walls of said recesses provides the barriers for both facing edges, and wherein said photoconductive material (20) is provided between said adjacent facing edges, and said sidewalls extend to at least the full height of said facing edge.

Respecting claim 5, Slayman discloses a capping material (portion of 20 on top of 16, 18) being provided over the electrodes (16, 18).

Respecting claims 7-8, Slayman discloses, in col. 3 lines 40+ and col. 5 line 65 to col. 7 lines 1+, the height of the side walls exceeds the height of the said facing edge by at most the penetration depth of the radiation used to excite the antenna, in the photoconductive material.

Respecting claims 9, 14-15 and 17-18, Slayman discloses the height of the sidewalls exceeds the height of the facing edge by at most 1 μm and the gap between facing edges is at most 100 μm (col. 7 line 57) wherein two electrodes (16, 18 in Fig. 1), comprise a plurality of

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elongate fingers, provided in an interdigitated arrangement with the facing edges being provided by the elongate edges of adjacent fingers. Further, Slayman discloses the photoconductive material comprises a least one selected from LT-GaAs, LT AlGaAs, As-GaAs or LT-InGaAs (col. 3 lines 18+), and said electrodes comprise at least one selected from Gold, Aluminium, Titanium, NiCr or Pd (col. 5 lines 10+).

Respecting claim 10, Slayman discloses the electrodes (16, 18) are provided on a planar surface of said photoconductive material (14) and a capping material (a portion of 20) is provided on the facing edges of said electrodes such that said capping material forms said barrier.

Respecting claim 16, Slayman further discloses the gap between facing edges being most 10 μm (col. 7 line 57).

Respecting claims 20-22, Slayman discloses, col. 7 line 65+, means for measuring the current flowing through the electrodes, and radiation is detected and irradiated in the frequency range from 0.25GHz to 100THz (col. 6 lines 28+).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable Slayman.

Respecting claims 11-12, Slayman every features of the claimed invention except capping material being an antireflector material or one of silicon nitride, silicon dioxide,

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polyimide or acrylics. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select antireflector material or polyimide or acrylics for capping material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended uses as a matter of obvious design choice.

Respecting claim 13, Slayman discloses every features of the claimed invention except electrodes being in bow-tie configuration. However, it would have been an obvious matter of design choice to have the electrodes being a bow-tie shaped, each electrode having a triangular portion and being arranged such the apexes of said triangular portion face each other and are spaced apart, said facing edges being provided by said apexes since such a modification would have involved a mere change in the shape of a radiating elements (referred to US 5,663,639 or US 6,325,294 which teaches the claimed tie-bow electrodes). A change in shape is generally recognized as being within the level of ordinary skill in the art.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable Slayman in view of YAMAMOTO, HIROCHIKA (JP 11-243217 of record).

Slayman discloses every feature of the claimed invention except biasing means. YAMAMOTO discloses, in the Abstract, biasing means configure to apply a bias between facing edges of adjacent electrodes, said biasing means being configure to bias the electrodes such that the current density at their facing edges exceeds the current density at which electromigration occurs. It would have been obvious to one having ordinary skill in the art to provide Slayman's antenna with biasing means as taught by Yamamoto in order to improve antenna's operation.

Allowable Subject Matter

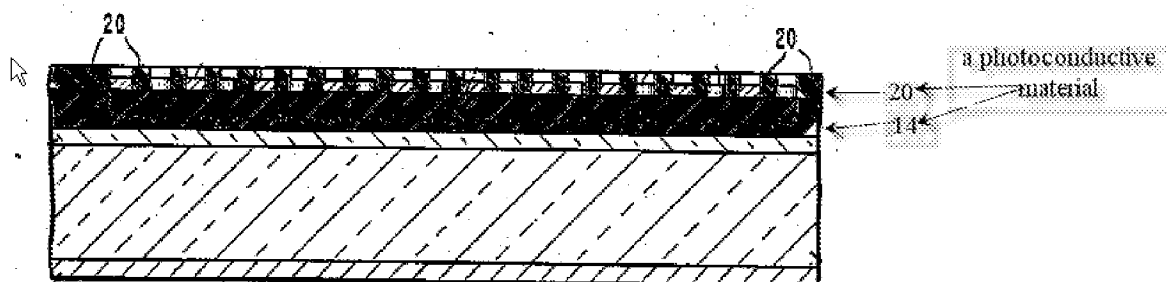
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10. Claim 6 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: The cited art of record fails to teach, in a combination with other limitations, a capping material is provided over at least a part of the facing edges such that said capping material and the sidewalls of said recess form said barrier.

Response to the arguments

12. With respect to amended independent claim 1, Applicant argues Slayman does not disclose a claimed features of “the side-walls of the recess providing the recited barrier are formed from said photoconductive material” since Slayman discloses that **the barrier is formed by a different passivation layer** that is separate from and that has different properties **than the active layer 14**. The Examiner respectfully disagrees. Claim 1 recites “the side-walls of the recess formed **from a photoconductive material, a side -wall of the recess providing said barrier**” which is not exclusive the photoconductive material from being formed from different layers. Therefore, layers 14 and 20 of Slayman reads on a photoconductive material as claimed. In other words, Slayman clearly discloses, in Fig. 2 of Slayman or the best seen in the above Drawings 1 and 2, **the side-walls of the recess formed from a photoconductive material, wherein a side-wall of the recess providing said barrier** as claimed.



Drawing 2

Since Slayman discloses every features of the claimed invention, the 102 rejection of claim 1 is proper.

With respect to the rejections of dependent claims 2 and 4-22, which employing the additional teaching of Slayman, Applicant has not offer any specific argument thereagainst. Accordingly, no further comments concerning the rejections of the dependent claims are necessary.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiry

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trinh Vo Dinh whose telephone number is (571) 272-1821. The examiner can normally be reached on Monday to Friday from 9:30AM to 6:00PM. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Owens, can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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November 01, 2008

/Trinh Vo Dinh/

Primary Examiner, Art Unit 2821